

REMARKS

Claims 7, 8, 10-17, 19-27, 29, and 30 are currently pending in the present application. The Advisory Action of April 30, 2006, indicated that the amendments presented in the Amendment of March 21, 2006, raised new issues that would require further consideration. Accordingly, Applicant requests entry and consideration of the amendments presented in the Amendment of March 21, 2006. Additionally, Applicant has hereby presented additional amendments to improve readability and clarify the claimed invention. Furthermore, Applicant has added new claims 31 through 37 and requests consideration thereof. Finally, in light of the following remarks, Applicant respectfully requests timely issuance of a Notice of Allowance. However, should the Examiner believe that the present application is not in condition for allowance, as addressed below, Applicant respectfully requests that any subsequent action include a detailed explanation of the rejections with respect to each and every element of the claims so that Applicant can properly address any outstanding issues in preparation for appeal.

In the final Office Action of January 23, 2006, all claims were rejected under 35 U.S.C. §103(a) as being unpatentable over Figure 1 of the present application (herein after "PA") in view of Meyer et al. (U.S. Patent No. 5,283,941). With respect to claims 7, 17, 26, and 27, the Office Action asserted that "Meyer et al. disclose a rotor assembly (10)...wherein the joint assembly has securing surfaces that are configured to essentially eliminate singularity points along a joint of the joint assembly (see abstract)." However, as previously addressed in the Amendment of March 21, 2006, not only does Meyer et al. fail to teach or suggest the claimed invention, Meyer et al. actually teaches away from the claimed system by teaching the use of similar (not dissimilar) materials, which give rise to the potential for the claimed singularity points. Contrary to the Office Action, Meyer et al. does not teach or suggest any joint formed by dissimilar materials that is substantially free of singularities.

First, the Specification explicitly states, "'Singularity-free' means that when rotational torque causes member 12 to rotate about a central axis 16 through

member 12, stress is essentially evenly distributed along the entire joint length.” ¶[0024]. Accordingly, the present invention significantly reduces the likelihood of joint failure between members of **dissimilar** material by creating a bond that is essentially “singularity free”.

One of ordinary skill in the art will readily recognize that Meyer et al. teaches a system that consistently includes singularities along the joint. Furthermore, Meyer et al. teaches the use of similar (not dissimilar) materials – i.e. rotor bars and end rings both formed of chrome copper alloy or both formed of copper or copper alloys. See col. 1, ll. 19-40. To this end, Meyer et al. does not have to deal with the difficulties presented when joining or bonding dissimilar materials, such as the present invention seeks to overcome. Rather, Meyer et al. is focused on producing joints without unduly weakened bonds by controlling “overaging or overaged temperatures.” See col. 1, ll. 34-40 and col. 2, ll. 23-27. Meyer et al. does not teach or suggest the use of dissimilar materials and as stated, one of ordinary skill will readily recognize that Meyer et al. is consistently plagued by singularities.

On the other hand, the claimed invention is clear that “dissimilar” materials are being bonded through a join that is essentially “singularity-free.” In fact, claims 14 and 24 make clear that one of the dissimilar materials is a thermal insulator and the other material is a metal. Furthermore, in the After-Final Amendment of March 21, 2006, Applicant amended the claims to clarify that the joint assembly includes a bond formed between at least two members formed of **dissimilar materials** that is “substantially free” or that “essentially eliminates” singularities.

As noted in the After-Final Amendment, the Final Office Action concluded that “the proposal in combination of PA and Meyer et al. disclose one of the materials is a thermal insulator and the other material is metal,” but conspicuously failed to include any citation to support this conclusion. Final Office Action, pg. 3. In fact, when addressing claims 8, 10-16, 19-25, 29, and 30, the Final Office Action provided no analysis of or citation to the prior art to support any rejection. Rather, the rejections were presented as unsubstantiated conclusions. However, one of ordinary skill in the art would readily recognize that the art of record clearly does not teach or suggest the claimed invention.

For example, claims 11 and 12 include various elements that make clear that the motor is a superconducting motor. For example, claim 11 calls for the motor to include "a refrigeration system providing a cooling agent to the rotor assembly to maintain rotor windings of the rotor assembly at a cryogenic temperature" and claim 12 calls for "a vacuum jacket surrounding the rotor assembly to form a vacuum chamber therewithin that assists in thermally insulating the rotor windings." Additionally, claim 19, hereby amended for clarity, calls for the system to include a refrigeration system that provides a cooling agent to cool the rotor windings. Applicant questions how Meyer et al., which does not teach or suggest superconducting motors, can be said to teach such a system or motivate combination with art to yield such a system? Similarly, claim 20 calls for the joint assembly to form a torque tube including the first and the second members adhesively bound together. Similarly, how can Meyer et al., even when combined with Fig. 1, be said to teach or suggest such a system when reference to a "torque tube" is never made within the patent?

In fact,, Meyer et al. makes no teaching or suggestion of its applicability to superconducting motor systems at all. Given the fact that Meyer et al. is directed to the use of similar (not dissimilar) materials and does not teach or suggest the use of superconducting motors, Applicant does not believe Meyer et al. is even analogous art.

To support this position, Applicant submits herewith a Declaration under 37 C.F.R. §1.132 signed by Inventor Boris A. Shoykhet, a widely recognized expert in the field of superconducting motors, as evidenced by the associated news articles setting forth Rockwell Automation's (and Mr. Shoykhet's) widely recognized expertise in the art. As supported by Mr. Shoykhet's Declaration, one of ordinary skill in the art looking to substantially reduce or eliminate singularities arising from the use of dissimilar materials utilized in superconducting motors would not consider Meyer et al. since 1) it teaches the use of similar materials for rotor bars and end rings, and 2) does not teach or suggest the applicability of any brazing method taught therein to the operational and environmental constraints of superconducting motors.

Finally, Applicant has included new claims 31 through 37, which call for a superconducting motor that, in part, includes “a rotor assembly including at least two members formed of dissimilar materials operatively mounted for rotation within the cavity, wherein a first of the members includes a first surface configured to have a first operational temperature and a second of the members includes a second surface configured to have a second operational temperature different from the first operational temperature.” Additionally, claim 31 calls for “a joint assembly connecting the at least two members together along securing surfaces that are substantially free of singularity points and providing thermal insulation between the first surface and the second surface to separate the first operational temperature from the second operational temperature.”

Nowhere does the art of record teach or suggest such a system. Rather, as shown above, Meyer et al. is directed to traditional motor systems, where the rotor assembly operates at substantially similar temperatures. That is, one of ordinary skill in the art would readily recognize that Meyer et al. does not teach or suggest a first member having “a first surface configured to have a first operational temperature” and a second member having “a second surface configured to have a second operational temperature different from the first operational temperature.” To this end, Meyer et al. cannot be said to teach or suggest the claimed joint assembly that 1) connects the two members through a join that is substantially free of singularities, and 2) provides “thermal insulation between the first surface and the second surface to separate the first operational temperature from the second operational temperature.”

Beyond these distinctions, the art of record clearly does not teach or suggest the additional subject matter called for in claims 32-37. However, should the Examiner disagree with Applicant's contention with respect to claims 32-37, or any dependant claims, Applicant respectfully requests detailed and reasoned statements setting forth the basis of rejection for each and every element of the claims. In particular, Applicant requests that such statements including citations to portions of the art of record supporting the Examiner's position, as required by MPEP § 2131.

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For at least these reasons, claims 7, 8, 10-17, 19-27, 29, and 31-37 are patentably distinct from the art of record. Hence, the present application is in condition for allowance and timely issuance of a Notice of Allowance is respectfully requested. As always, the Examiner is invited to contact the undersigned at the telephone number appearing below if such would advance the prosecution of this application.

The Commissioner is hereby authorized to deduct the fee for a two month extension of time by a large entity and the fees for the addition of independent claim 31 and dependant claims 32-37, along with any other fees arising in the present application, for Deposit Account No. 17-0055.

Respectfully submitted,

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